Identification of Anions by Pharmacopoeial Tests

Experiment 5 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To identify assigned inorganic ions using characteristic and confirmatory reactions.

Principle

A screening reaction suggests an ion; a selective confirmation and appropriate controls strengthen identification. Colour, solubility, pH and interference affect reactions.

Characteristic Reactions

Ion	Expected teaching response
Chloride	Dilute nitric acid followed by silver nitrate gives white silver chloride; the precipitate dissolves in the prescribed ammonia test.
Sulphate	Acidified barium-reagent testing gives a white barium sulphate precipitate that persists in dilute mineral acid.
Carbonate	Dilute acid causes carbon dioxide effervescence; the gas gives the assigned limewater confirmation.
Phosphate	The assigned molybdate method gives a characteristic yellow response under its prescribed acidic conditions.

Requirements

- Assigned ion solutions, positive controls and reagent blank
- Prescribed reagents, test tubes, droppers and PPE

Procedure

1. Plan aliquots

Read each prescribed reaction and divide the unknown into separate labelled portions.

2. Screen

Observe initial colour, solubility and the assigned preliminary reaction.

3. Confirm

Perform the specified confirmation on a fresh portion; compare with positive and blank controls.

4. Record

Write the reagent, actual observation, inference and supporting reaction.

5. Conclude

Identify the ion only when the observed evidence and controls agree.

Observations and Record

Ion / reaction	Actual observation	Inference
Chloride	_____	_____
Sulphate	_____	_____
Carbonate	_____	_____
Phosphate	_____	_____

Result

The assigned ion was identified as _____ based on _____ and _____. Controls: _____.

Precautions

- Use clean equipment; sodium and chloride contamination are common.
- Use the approved ventilation for gas-evolving tests.
- Do not mix unknown reagents or infer identity from one nonspecific colour.

Viva Questions and Answers

1. Why use a fresh aliquot?

Reagents from a previous test may interfere with the next reaction.

2. What is a confirmatory test?

A more selective reaction that supports the proposed identity.

3. Why include a blank?

It detects contamination and reagent background.

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